Hotel Solutions

Intesis/Fidelio Hotel PMS Gateway Integration to StruxureWare Building Operation, SmartStruxure Lite MPM-UN and SE8000 Room Controllers

SSL_APP_PMS_HOTEL

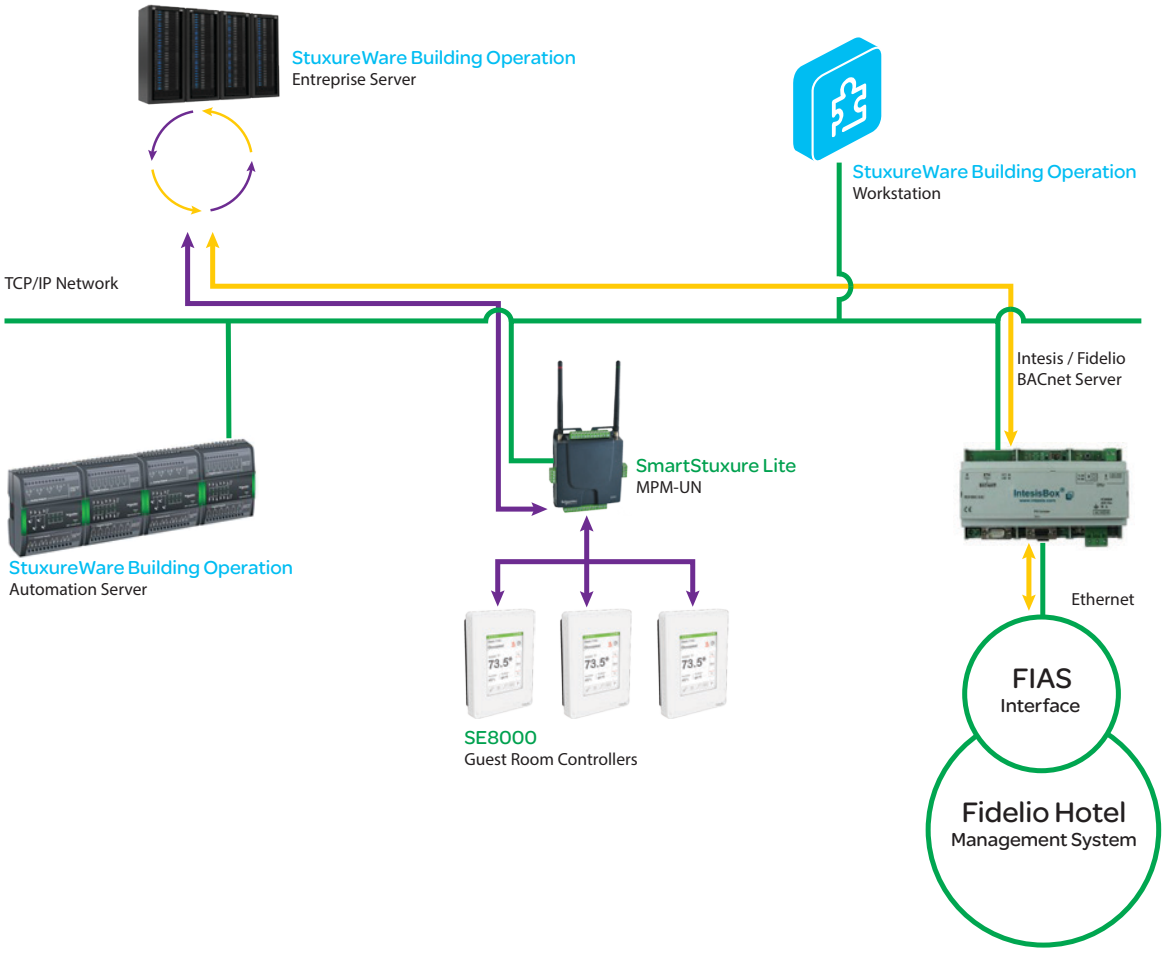
Schneider Electric

HOTEL PMS SYSTEM INTEGRATION

Integrating SE8000 series Room Controllers used in hotel guest rooms into the hotel's PMS system will provide added energy savings to the operation of the hotel and guest rooms.

As the hotel PMS system knows if the hotel guest room is "Booked" or "Not Booked", this status can be integrated with the hotel guest room environmental controls to change the heating and cooling temperature setpoints and also "Enable" and "Disable" the guest room master lighting.

System Architecture



Architecture

All of the system devices in the above architecture have been configured within similar ranges of IP addresses and subnet masks.

CONFIGURING THE INTESIS GATEWAY

For detailed information on the initial setup and configuration please refer to the Intesis web site

http://www.intesis.com

The following are the relevant documentation for the Intesis/Fidelio BACnet server

Intesis LinkBoxBACnet User Manual
IntesisBox BACnet IP Server Fidelio User Manual
IntesisBox BACnet IP Server Fidelio PICS

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CONFIGURING THE INTESIS/FIDELIO BACNET SERVER

Please refer to the following Intesis manuals for all the user and detailed information on configuring the device.

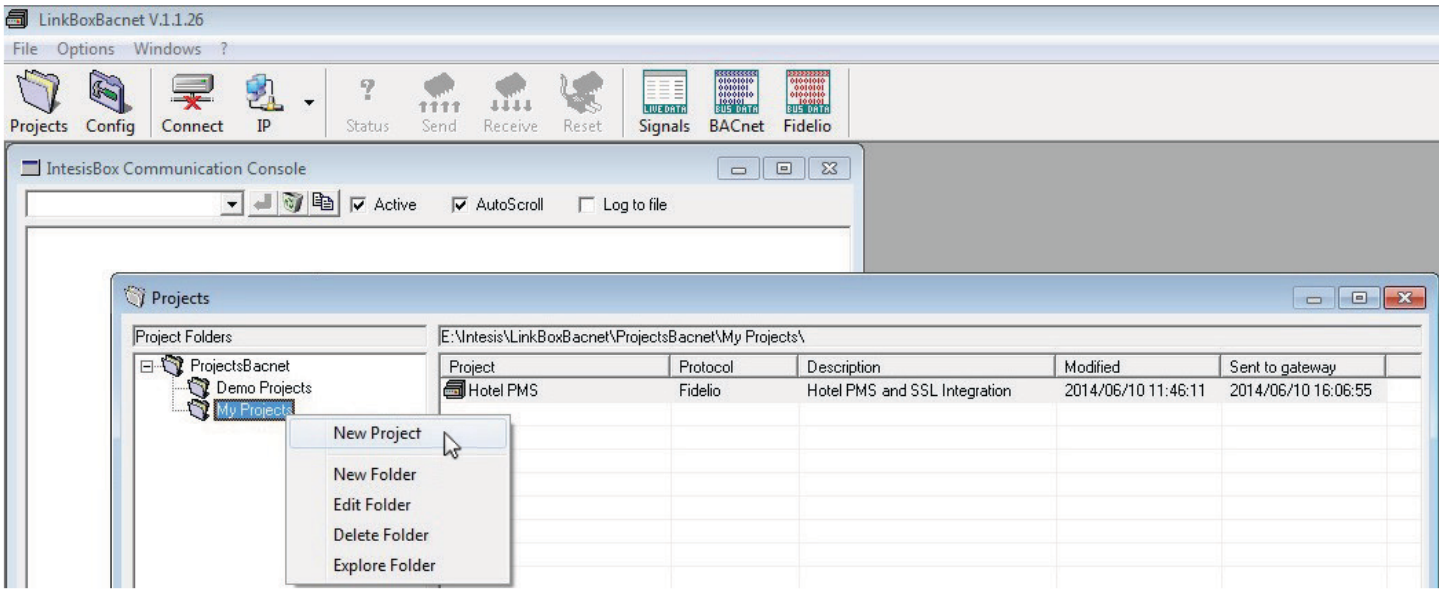
- IntesisBox BACnet IP Server (Fidelio IP) User Manual
- Intesis LinkBoxBACnet User Manual (Configuration & monitoring software of IntesisBox BACnet series)

Getting Started

The software used to configure the Intesis/Fidelio BACnet Server is:

About LinkBoxBacnet
LinkBoxBacnet
Version 1.1.26
Configuration software for IntesisBoxBacnet
INTESIS SOFTWARE SL
This computer program is protected by copyright law and international treaties. Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties.
Accept

When the LinkBoxBacnet configuration software is initialised, you have the opportunity to select an existing project, select a demo project, or start a new project.



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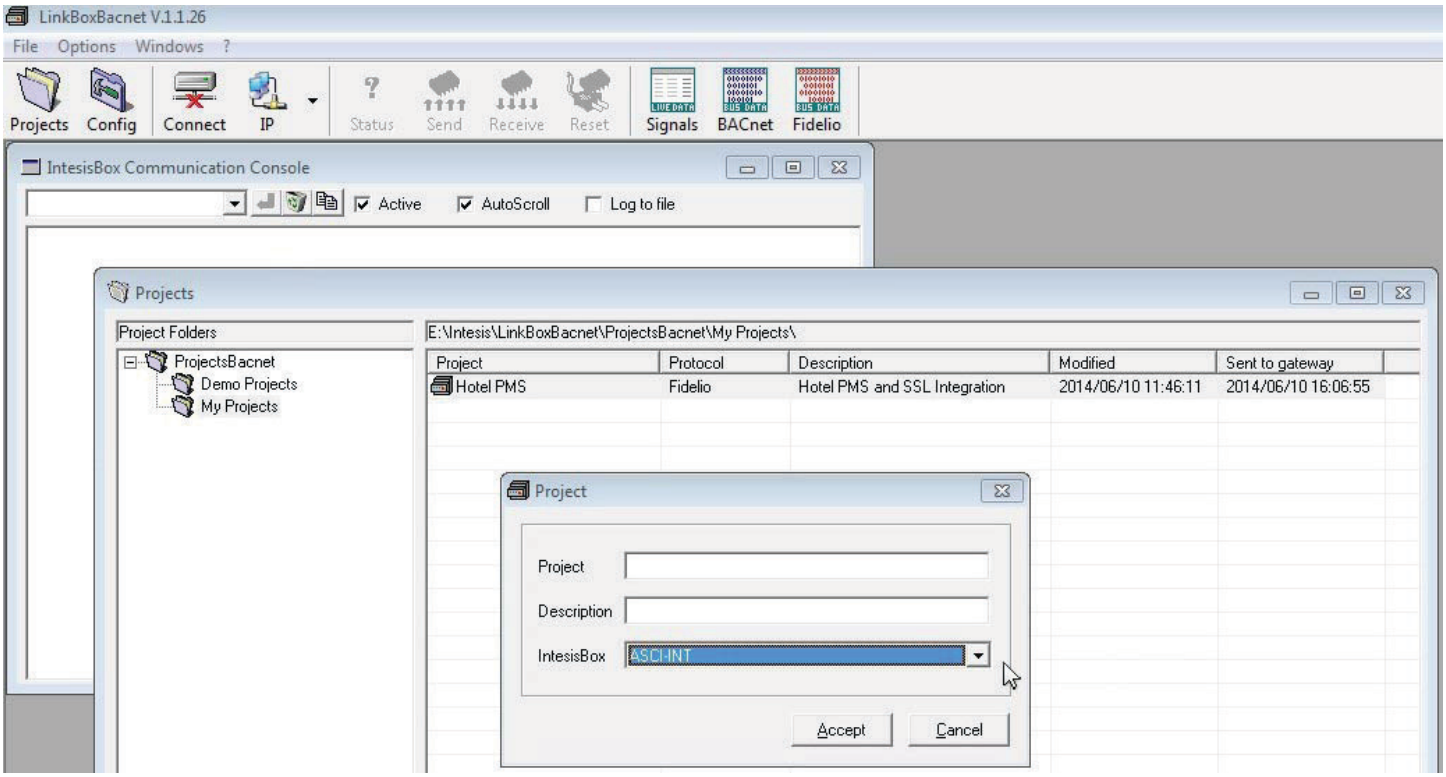

In this example we selected **New Project**.

Once you have selected a new project you can then configure the application parameters as required.

In the **Project Dialogue** window you can configure the **Project Name** and **Description** fields, and select the type of IntesisBox device from a drop down list.

Once the above parameters have been defined it is then possible to customize the communication parameters and the application parameters of your project.

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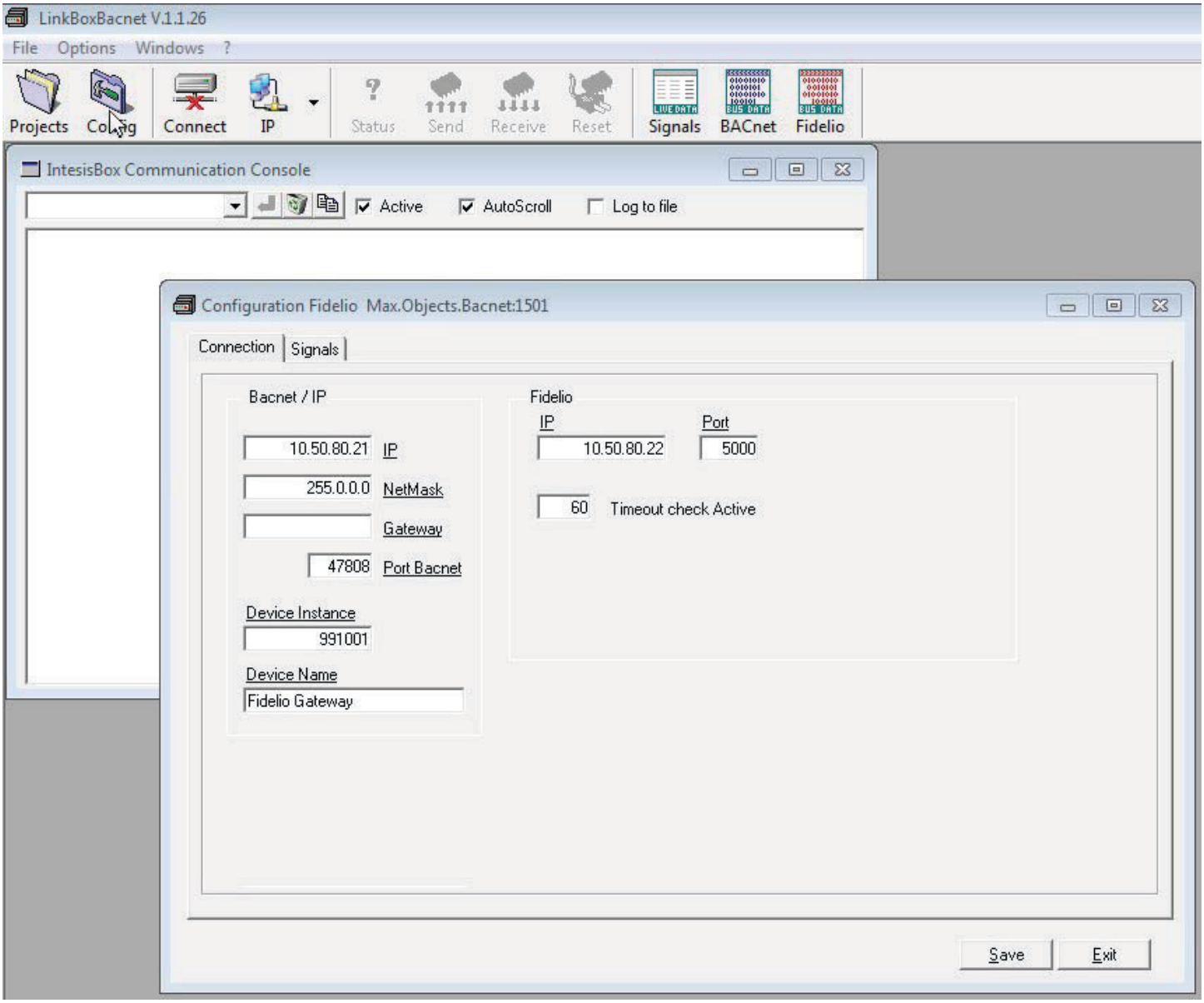
Communication Configuration

Select the **Config** icon on the tool bar.



From the Fidelio **Configuration** dialogue window, it is possible to configure:

- The IP addresses for the BACnet IP and Fidelio IP communications.
- NetMask
- Gateway
- Bacnet Port
- Device Instance
- Device Name

The Intesis server has two IP addresses, one for the BACnet IP side which is used for communicating with StruxureWare Building Operation (SBO) and one for the Fidelio side which is used to communicate with the Hotel PMS system. Both of the Intesis/Fidelio BACnet Server IP addresses are configurable to suit the application and project requirements.

Once the Intesis gateway has been configured, it is necessary to configure a BACnet interface in SBO to read the data points from the Intesis/Fidelio BACnet server and write their corresponding values via SBO to the SE8000 Room Controller. The BACnet instance ID must be the same for both the Intesis/Fidelio BACnet Server and SBO.

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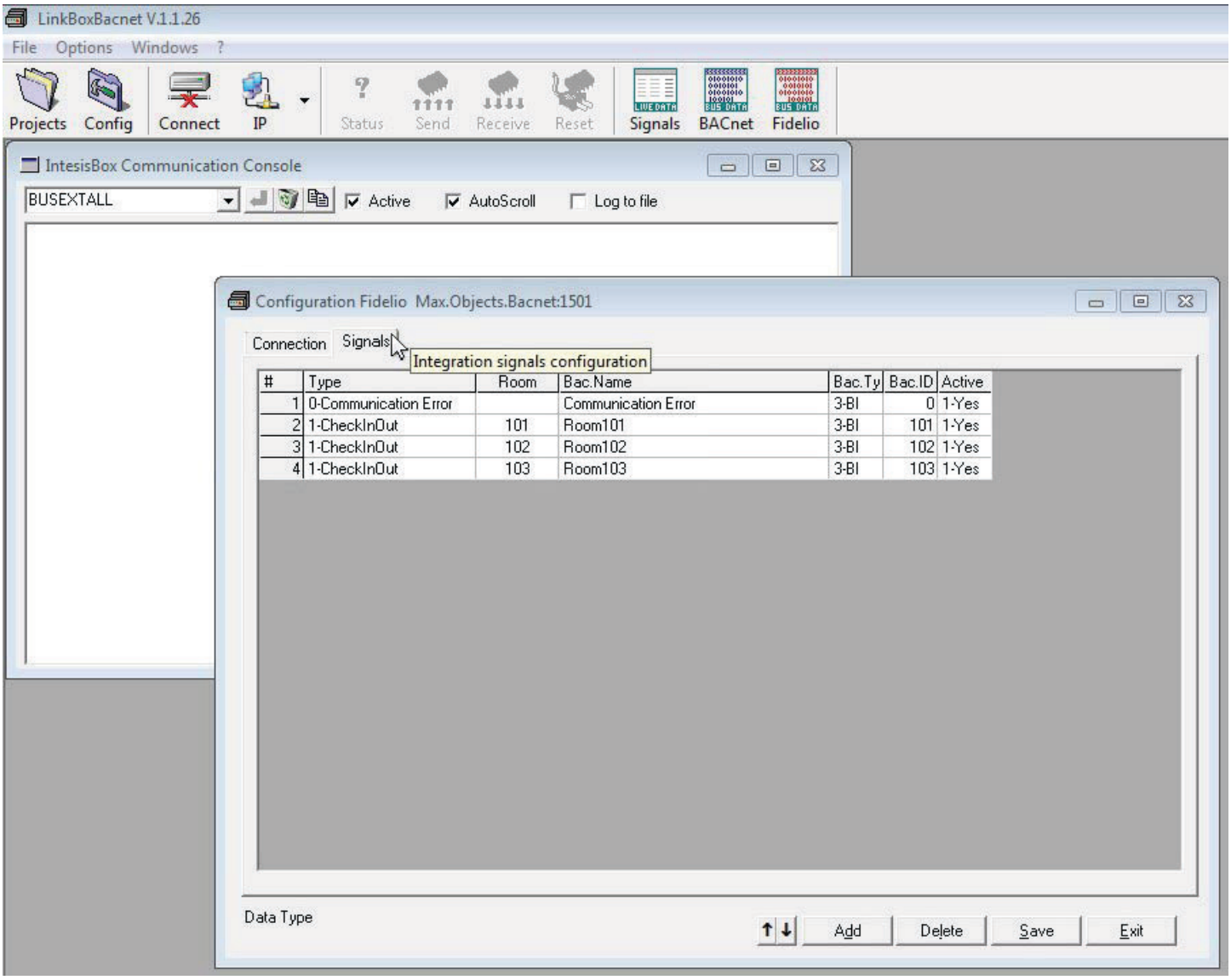
Application Configuration

From the Fidelio **Configuration** dialogue window select the **Signals** tab


LinkBoxBacnet V.1.1.26
File Options Windows ?
Projects Config Connect IP Status Send Receive Reset Signals BACnet Fidelio
IntesisBox Communication Console
BUSEXTALL
Active AutoScroll Log to file
Configuration Fidelio Max.Objects.Bacnet:1501
Connection Signals
Integration signals configuration
Type Room Bac.Name Bac.Ty Bac.ID Active
1 0-Communication Error Communication Error 3-BI 0 1-Yes
2 1-CheckInOut 101 Room101 3-BI 101 1-Yes
3 1-CheckInOut 102 Room102 3-BI 102 1-Yes
4 1-CheckInOut 103 Room103 3-BI 103 1-Yes
Data Type
Add Delete Save Exit

In our example we have added 3 guest rooms **Rm 101**, **Rm 102** and **Rm 103** to our application.

From the above window you can set the following information to suit your applications requirements:

- # (Number)
- Type
- Room Number
- Bac.Name
- Bac.Type
- Bac.ID
- Active

Once the above parameters have been set select **Save** and **Exit**.

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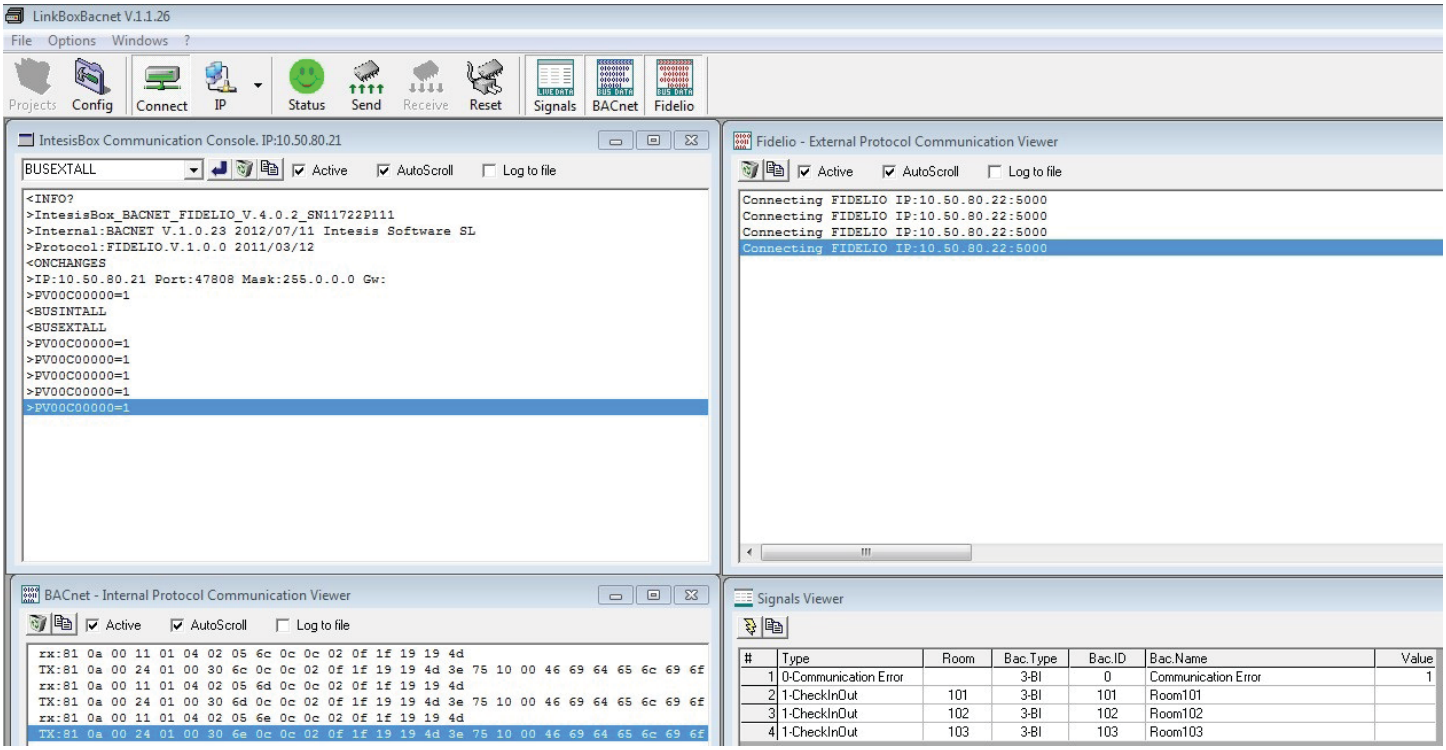
It is possible to monitor the communications through the Intesis/Fidelio BACnet server by selecting the following icons from the toolbar

- Signals
- BACnet
- Fidelio

There are 3 viewing consoles:

- Intesis Communications Console for the Intesis/Fidelio BACnet Server and SBO connection
- BACnet Internal CProtocol Communication Viewer
- Fidelio External Communication Viewer

In addition there is a Signals viewer window where it is possible to change the room status from **Checked In** to **Checked Out** or vice versa. This manual operation provides the ability to test the communications between the Intesis/Fidelio BACnet Server, the SBO Server, and the SE8000 Room Controller.


LinkBoxBacnet V.1.1.26
File Options Windows ?
Projects Config Connect IP Status Send Receive Reset Signals BACnet Fidelio
IntesisBox Communication Console. IP:10.50.80.21
BUSEXTALL Active AutoScroll Log to file
<INFO?
>IntesisBox_BACNET_FIDELIO_V.4.0.2_SN11722P111
>Internal:BACNET V.1.0.23 2012/07/11 Intesis Software SL
>Protocol:FIDELIO.V.1.0.0 2011/03/12
<ONCHANGES
>IP:10.50.80.21 Port:47808 Mask:255.0.0.0 Gw:
>PV00C00000=1
<BUSINTALL
<BUSEXTALL
>PV00C00000=1
>PV00C00000=1
>PV00C00000=1
>PV00C00000=1
>PV00C00000=1
Fidelio - External Protocol Communication Viewer
Active AutoScroll Log to file
Connecting FIDELIO IP:10.50.80.22:5000
Connecting FIDELIO IP:10.50.80.22:5000
Connecting FIDELIO IP:10.50.80.22:5000
Connecting FIDELIO IP:10.50.80.22:5000
BACnet - Internal Protocol Communication Viewer
Active AutoScroll Log to file
rx:81 0a 00 11 01 04 02 05 6c 0c 0c 02 0f 1f 19 19 4d
TX:81 0a 00 24 01 00 30 6c 0c 0c 02 0f 1f 19 19 4d 3e 75 10 00 46 69 64 65 6c 69 6f
rx:81 0a 00 11 01 04 02 05 6d 0c 0c 02 0f 1f 19 19 4d
TX:81 0a 00 24 01 00 30 6d 0c 0c 02 0f 1f 19 19 4d 3e 75 10 00 46 69 64 65 6c 69 6f
rx:81 0a 00 11 01 04 02 05 6e 0c 0c 02 0f 1f 19 19 4d
TX:81 0a 00 24 01 00 30 6e 0c 0c 02 0f 1f 19 19 4d 3e 75 10 00 46 69 64 65 6c 69 6f
Signals Viewer
Type Room Bac.Type Bac.ID Bac.Name Value
1 0-Communication Error 3-BI 0 Communication Error 1
2 1-CheckInOut 101 3-BI 101 Room101
3 1-CheckInOut 102 3-BI 102 Room102
4 1-CheckInOut 103 3-BI 103 Room103

To communicate with the remote device select the **IP** icon from the toolbar to select the type of communications with the Intesis/Fidelio BACnet server.

The options are:

- IP
- Serial Port

Once you have selected the type of communication:

Select the **Connect** icon on the tool bar once communications have been established with the Intesis/Fidelio BACnet server (indicated by the Green Smiley status icon on the toolbar)

Select the **Send** icon which will then download your application to the Intesis/Fidelio BACnet server. After this stage of the process is completed you can now proceed to configuring your SBO application.

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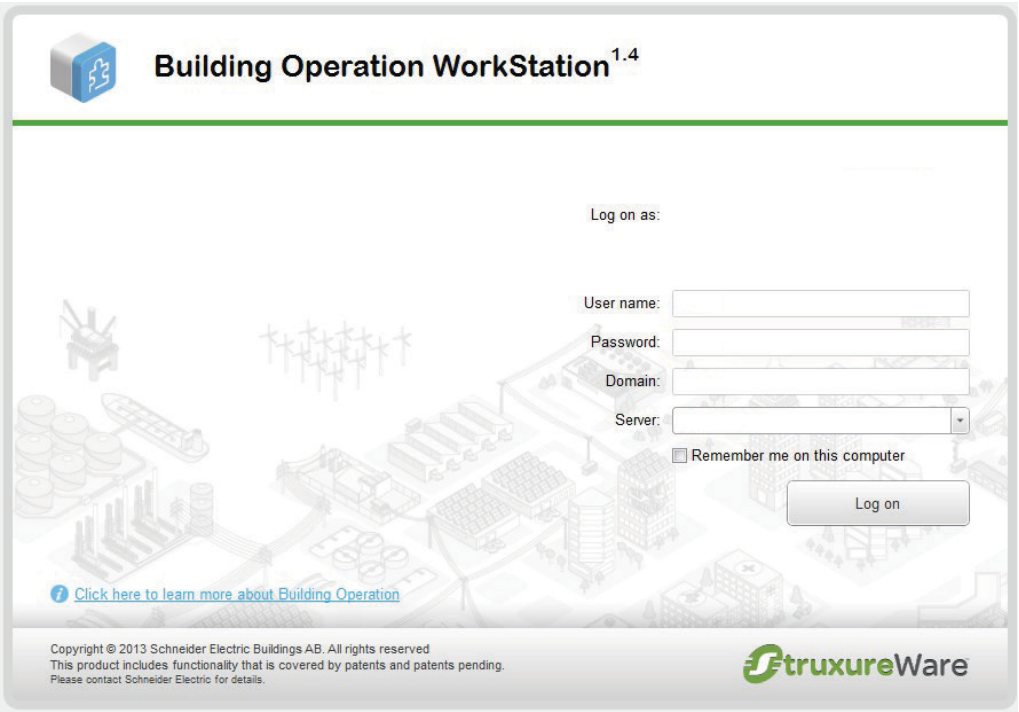
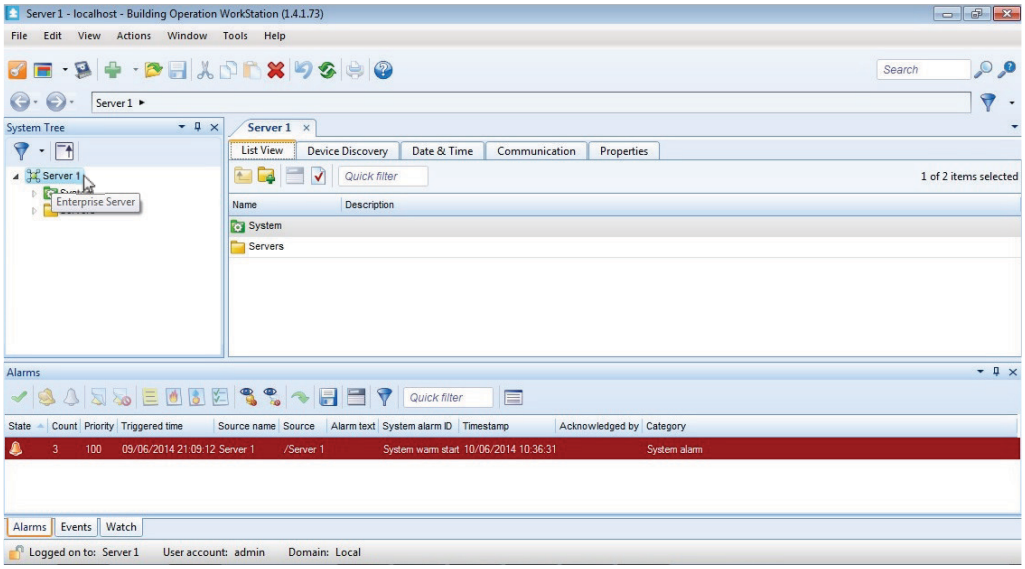
CONFIGURING THE SMARTSTRUXURE ENTERPRISE SERVER TO COMMUNICATE WITH THE INTESIS/FIDELIO BACNET SERVER

Log in to the Enterprise Server


Building Operation WorkStation 1.4
Log on as:
User name:
Password:
Domain:
Server:
Remember me on this computer
Log on
Click here to learn more about Building Operation
Copyright © 2013 Schneider Electric Buildings AB. All rights reserved
This product includes functionality that is covered by patents and patents pending.
Please contact Schneider Electric for details.
StruxureWare



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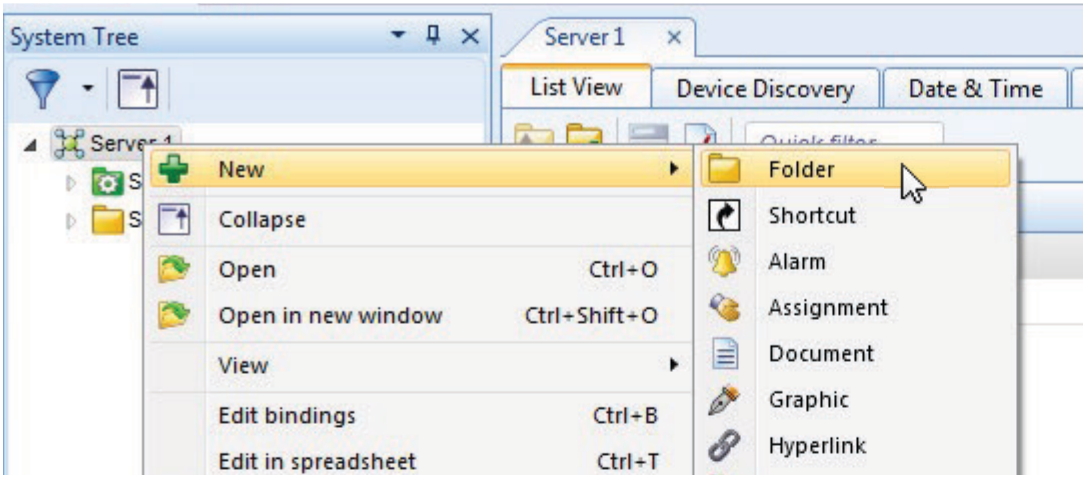
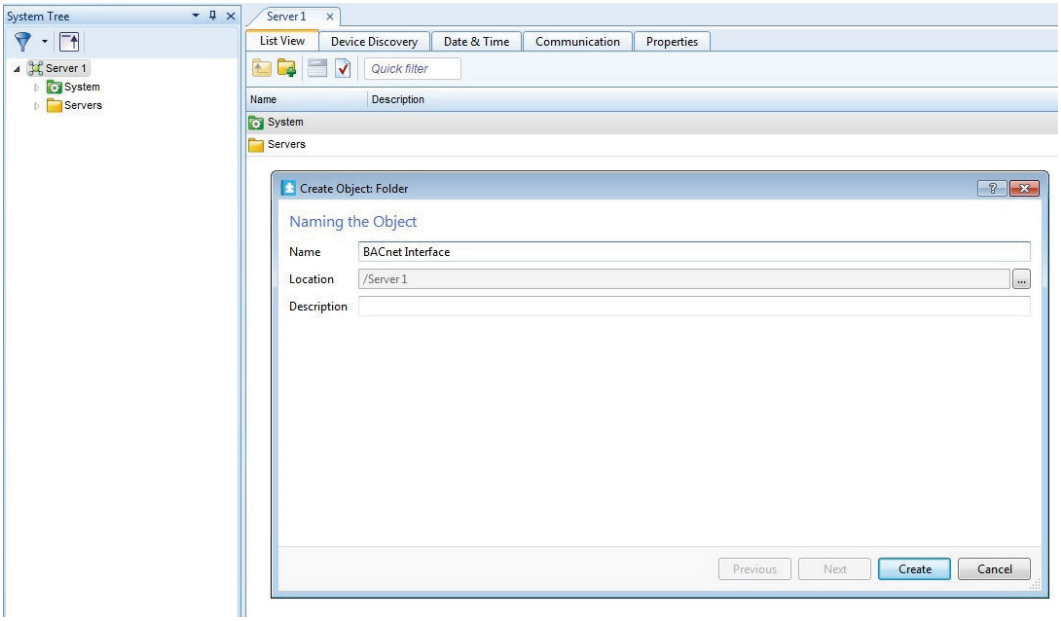
1. Select the **Server 1** object, then right click it and select **New**.
2. From the sub menu, select **Folder**.



3. Choose the name for the new folder, in this application we have named it **BACnet Interface**.
4. Once you have named your folder click **Create**



You will see in the system tree a new folder called **BACnet Interface**

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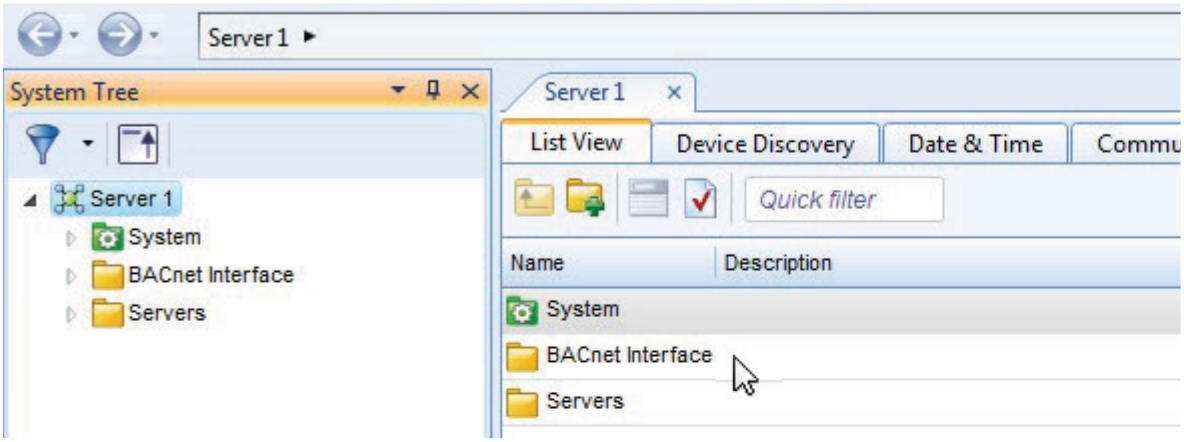
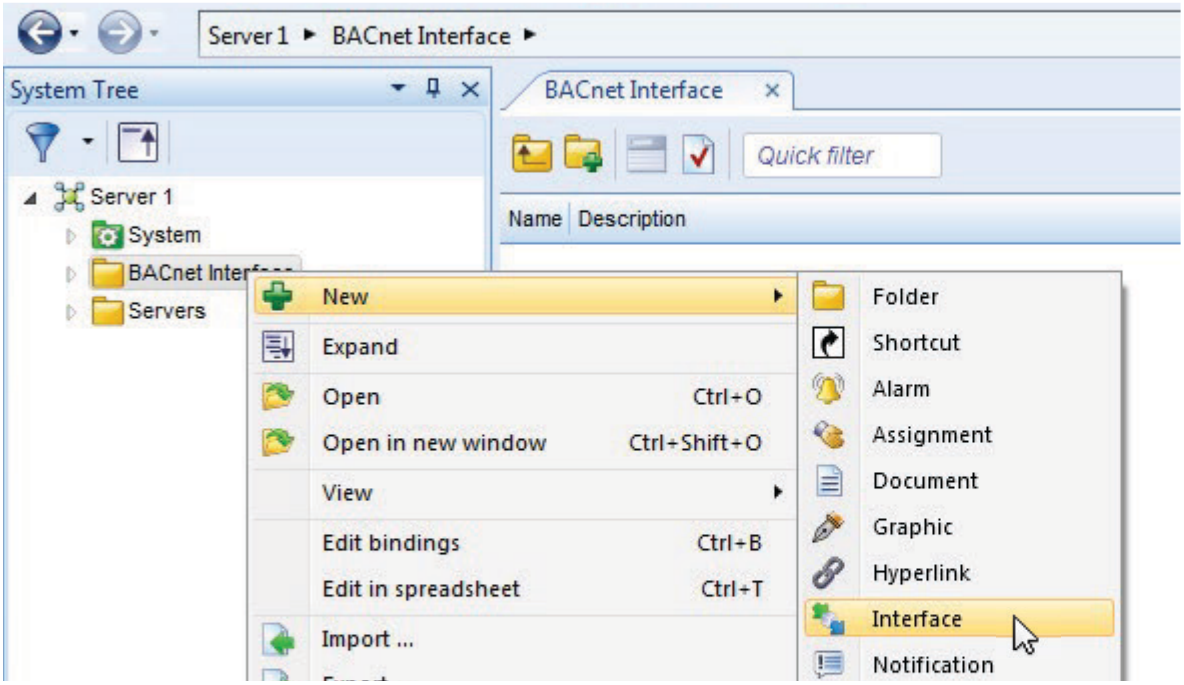
5. Select the **BACnet Interface** folder.



6. Right click it, and select **New** and then **Interface**.



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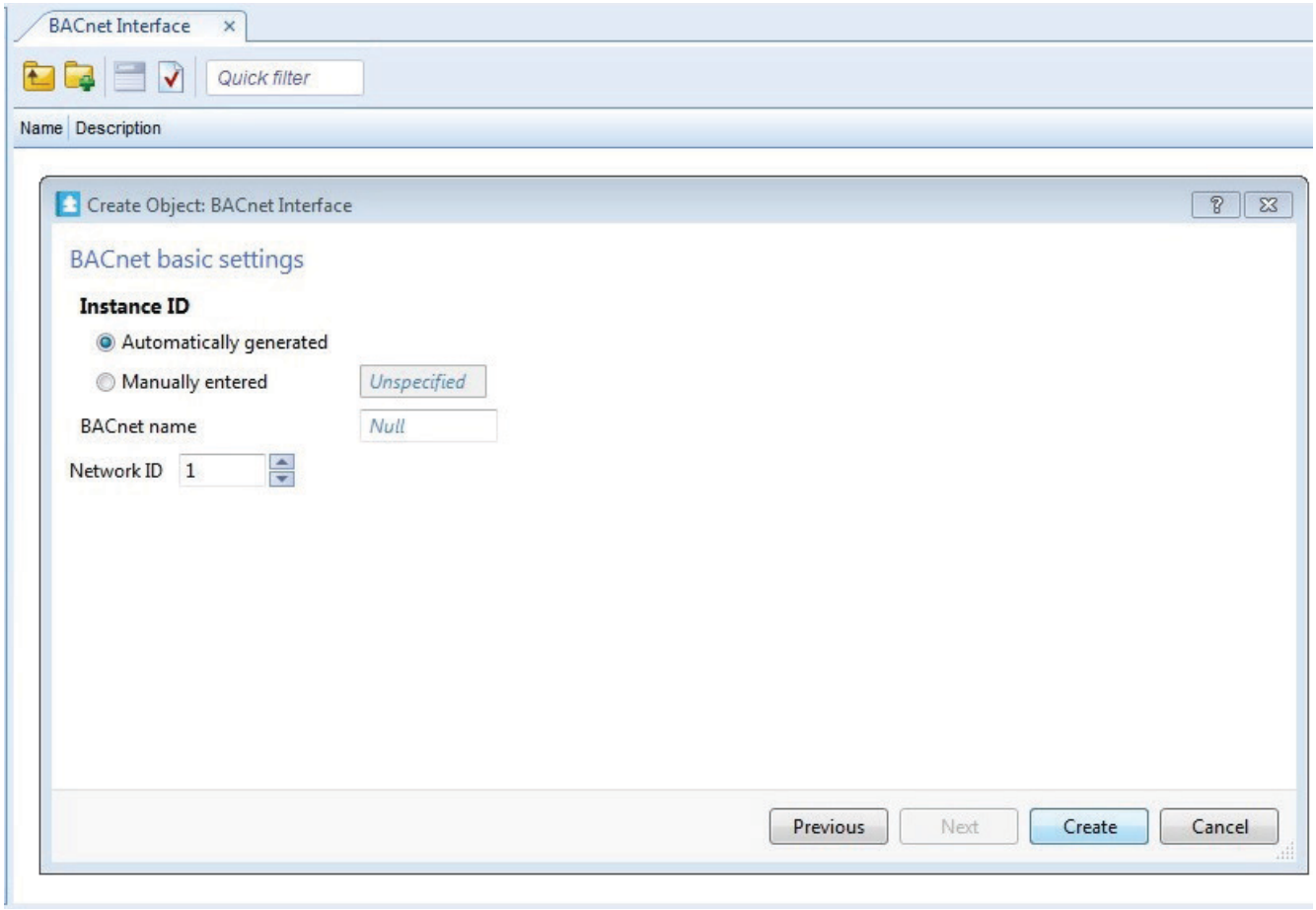
7. You will see a new dialogue window where you can select the **BACnet Interface** object, and then you will be able to name the BACnet interface as required. Once you have named the BACnet interface click **Next**.
8. Within the dialogue window you can change the **Network ID** number, however in the example it has been left at the default value of 1. Click **Create**. This will then create a BACnet interface on your Enterprise Server.



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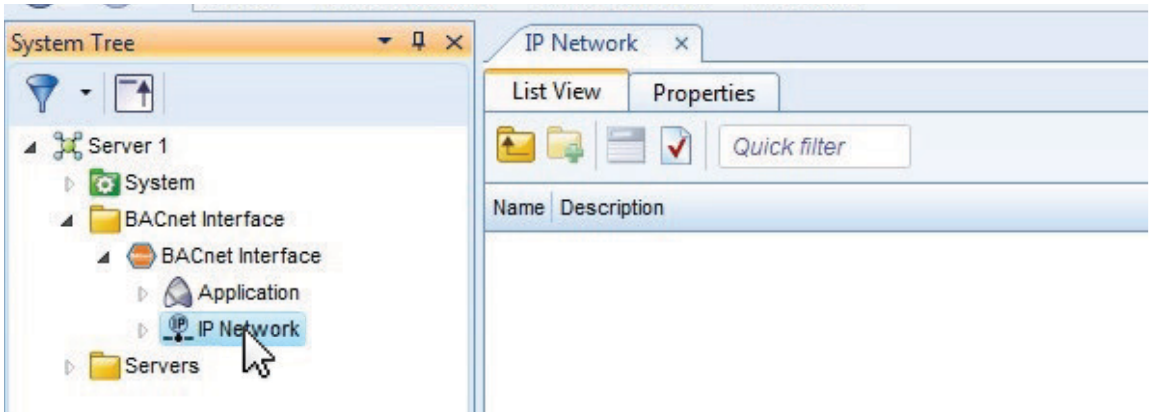
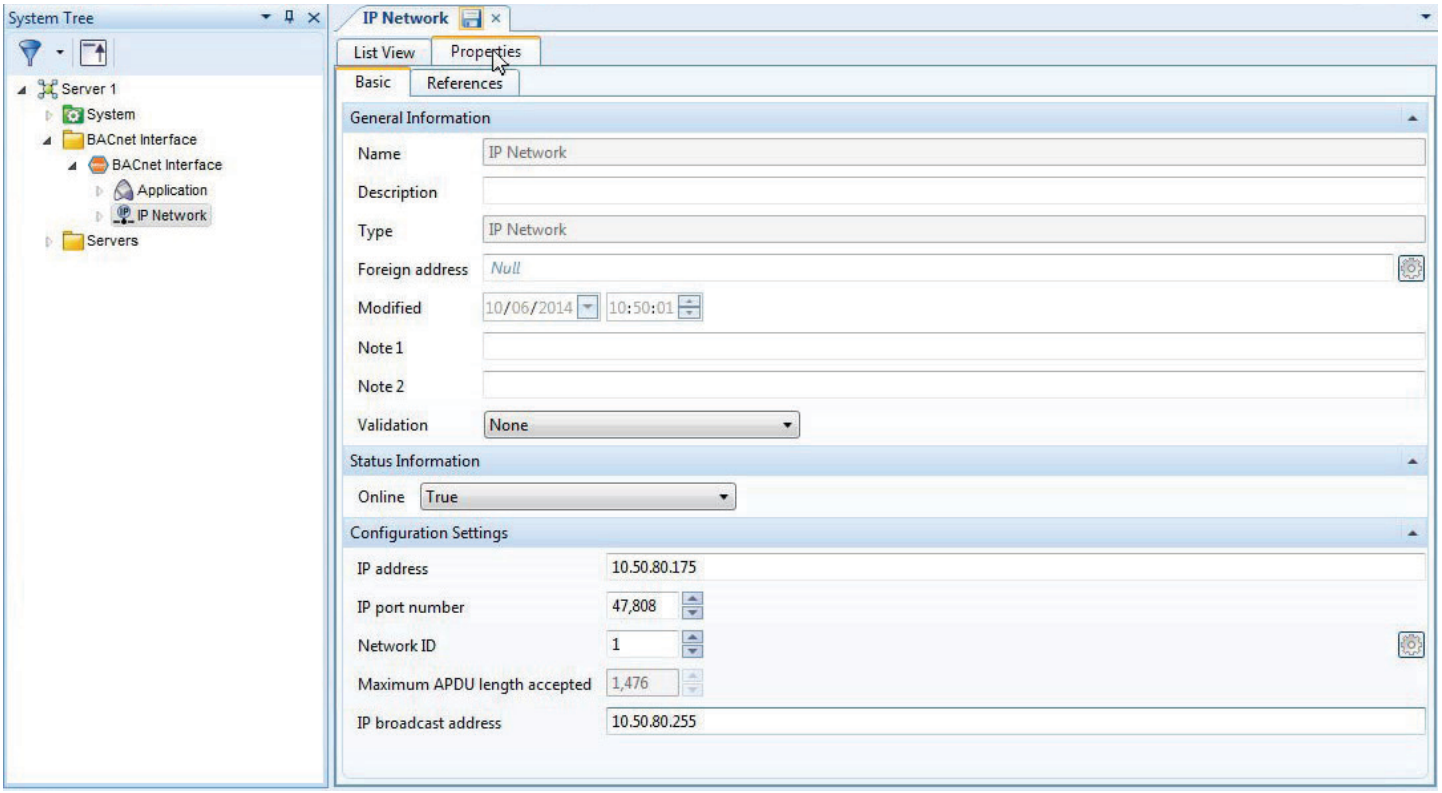
9. If necessary expand the **BACnet Interface** folder and then expand the **BACnet Interface** object.



10. Select the **IP Network** object.
11. Select the **Properties** tab to view the IP address and IP broadcast address. These should be changed to match the IP address of your Enterprise Server.



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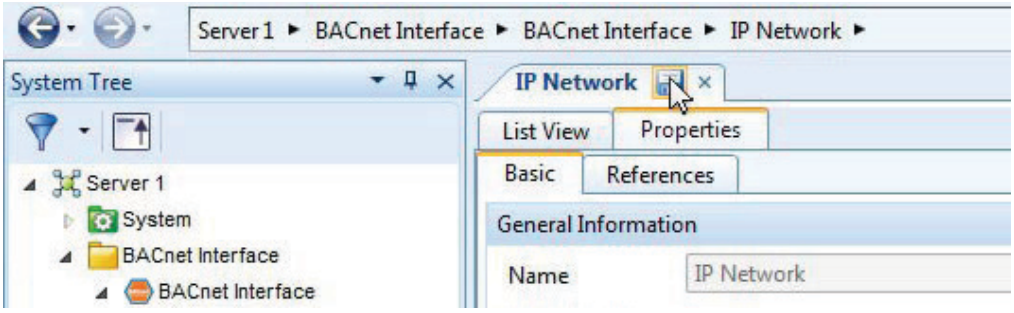
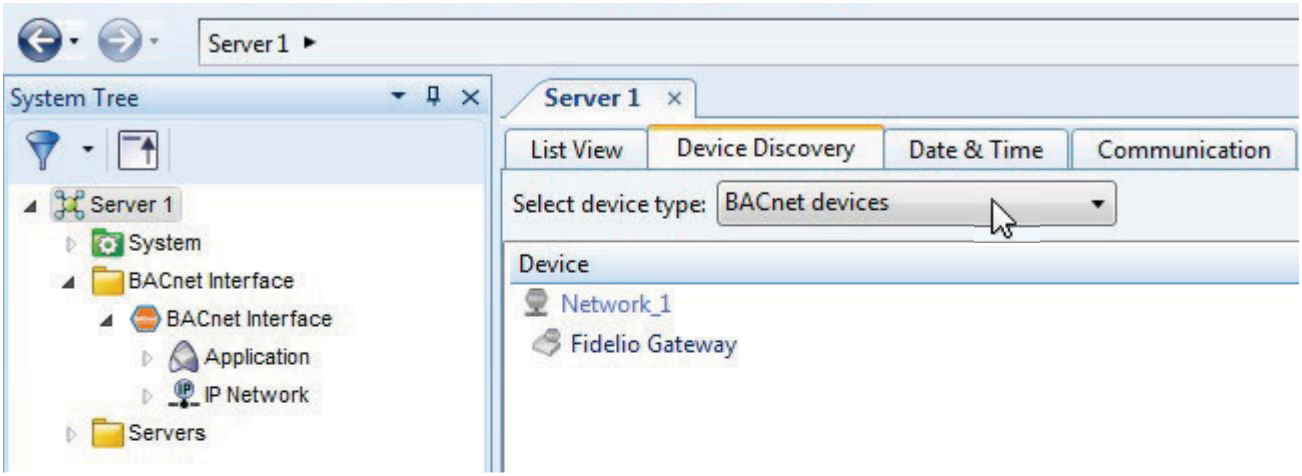
Once the IP address and IP broadcast address displayed in the window have been changed, select the **Save** icon on the **IP Network** tab to save these settings in your Enterprise Server.



12. Select the **Server 1** tab.
13. Select the **Device Discovery** tab.
14. From the **Select device type** drop-down menu you should select **BACnet devices**. You will then see **Network_1** and **Fidelio Gateway** in the **Device** tree.



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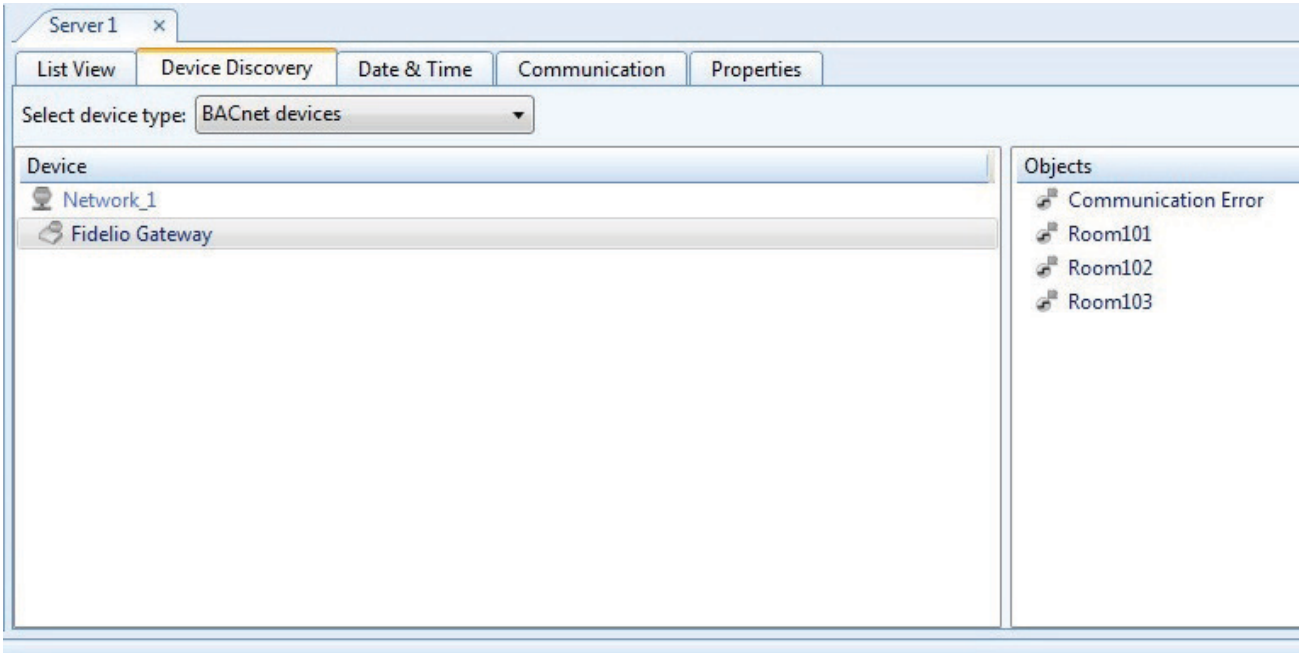
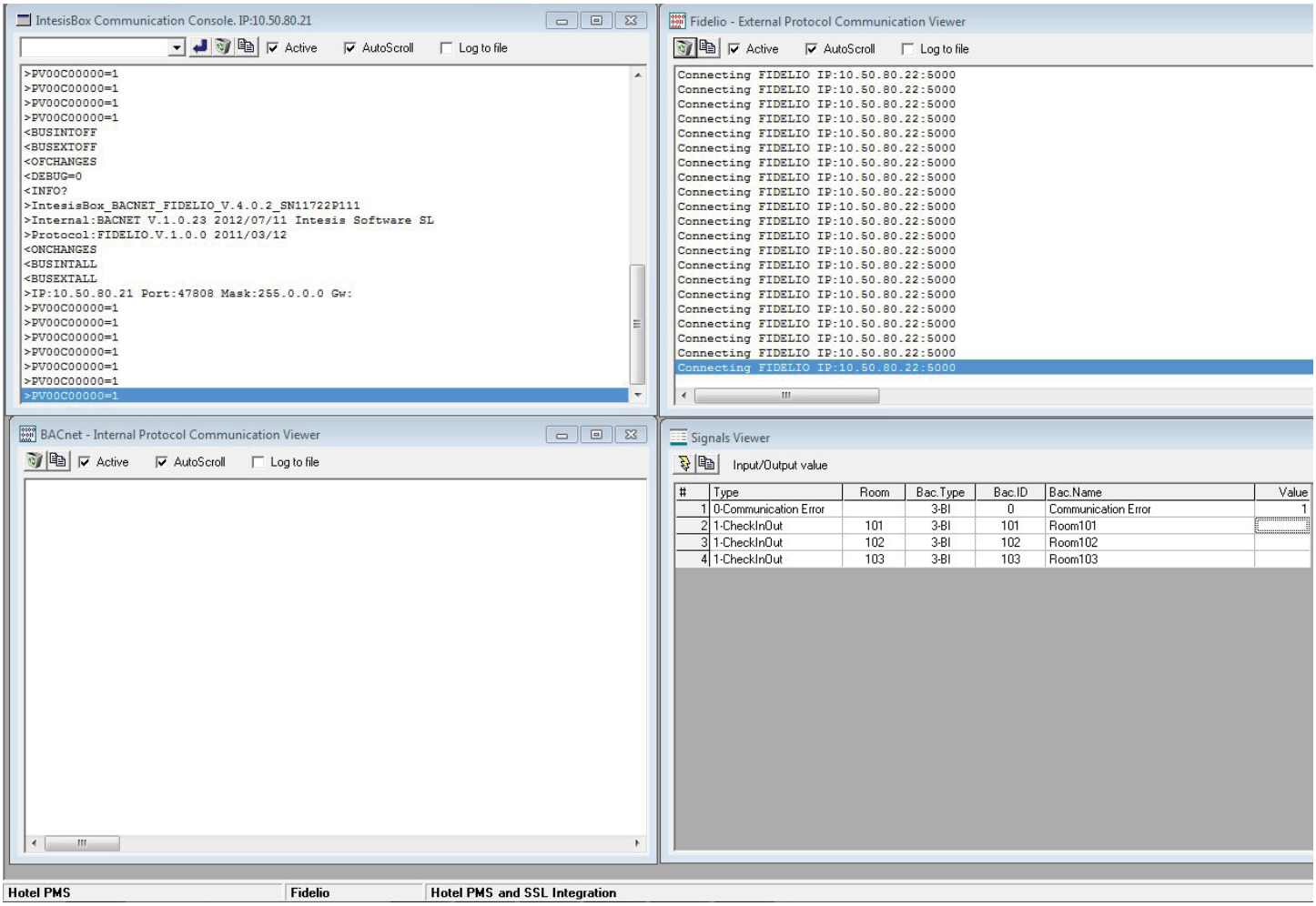
15. Select the **Fidelio Gateway** object and you will see the objects that have been configured in the **Fidelio Gateway** appear in the **Objects** window. In this example you can see that 3 objects **Room101**, **Room102** and **Room103** have been configured.



Below you can see the objects in the **Fidelio Gateway** that have been configured and replicated in the Enterprise Server.



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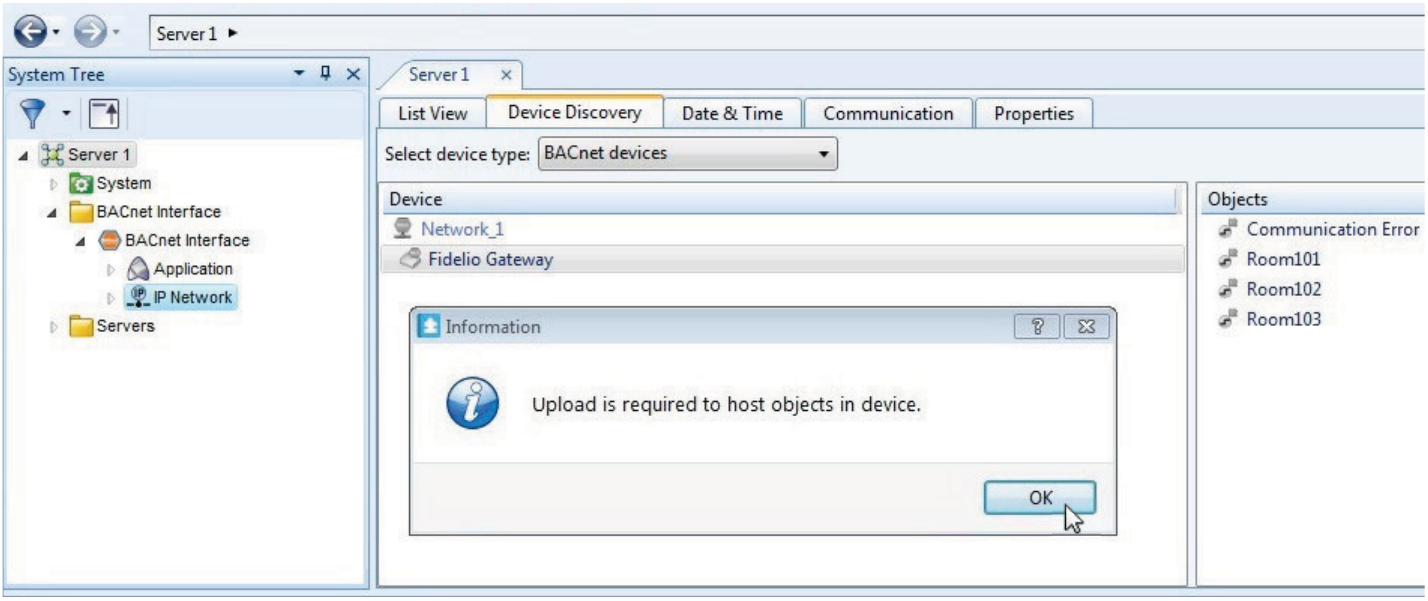
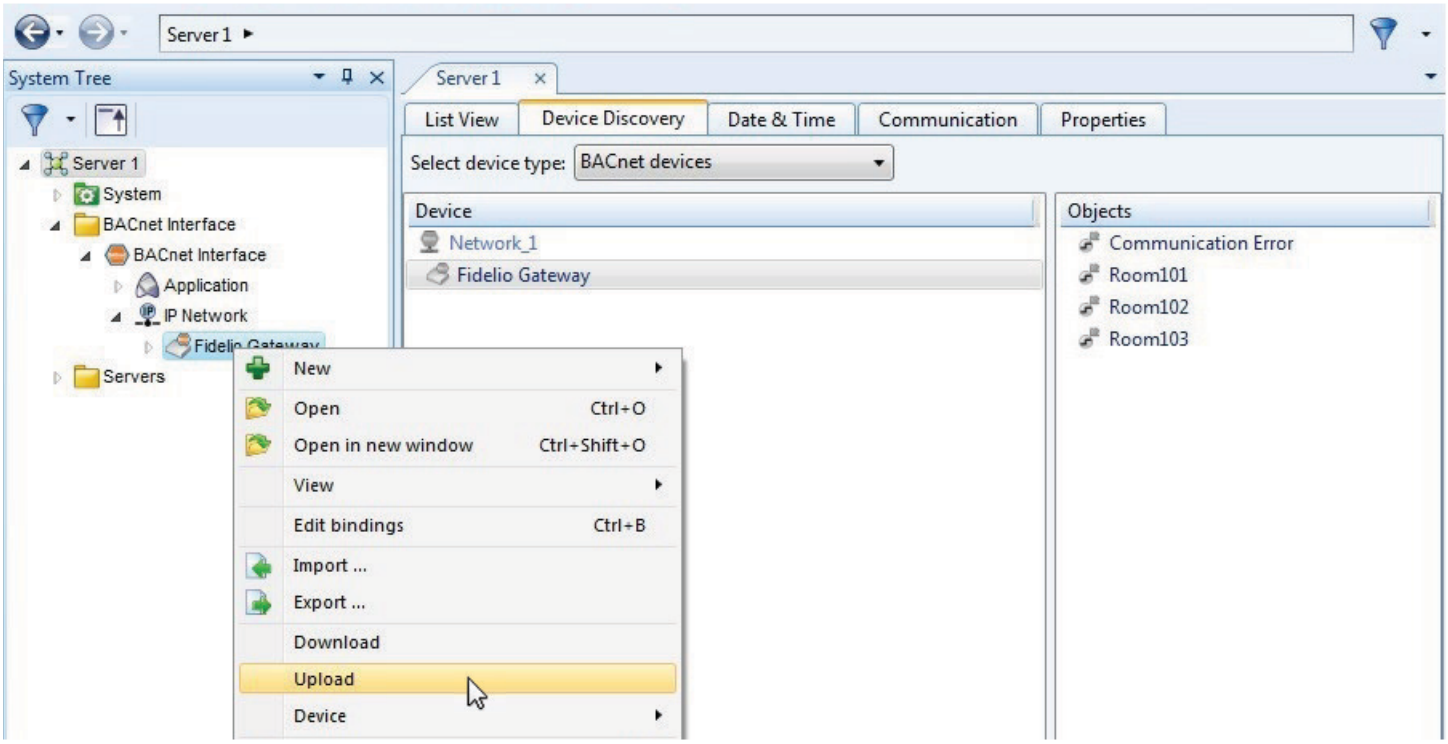
16. Select the **Fidelio Gateway** object and drag and drop this onto the **IP Network** under the **BACnet Interface**. Once you have done this you will see a dialogue window that advises you that you will need to **Upload** the required objects, select **OK** to close this window



17. Select the **Fidelio Gateway** object, and then right click and select **Upload** from the menu. This will upload the objects to the Enterprise Server.



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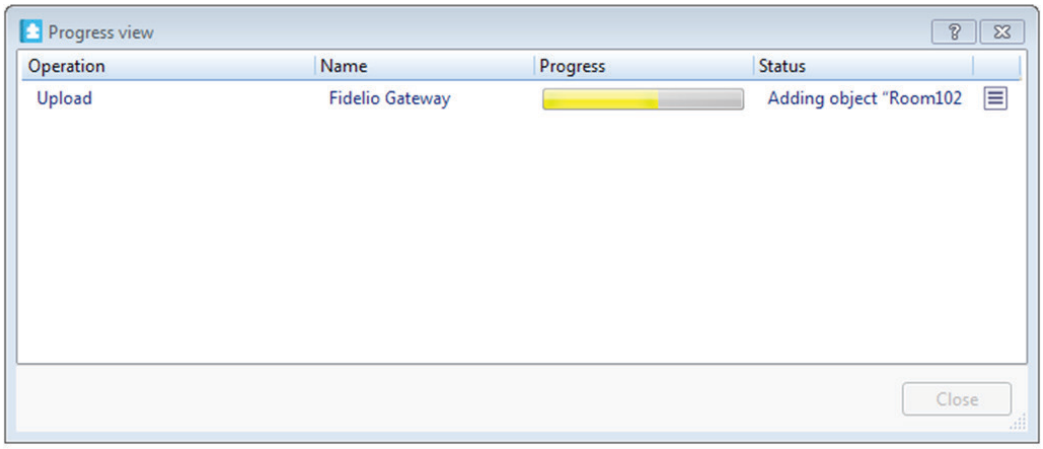
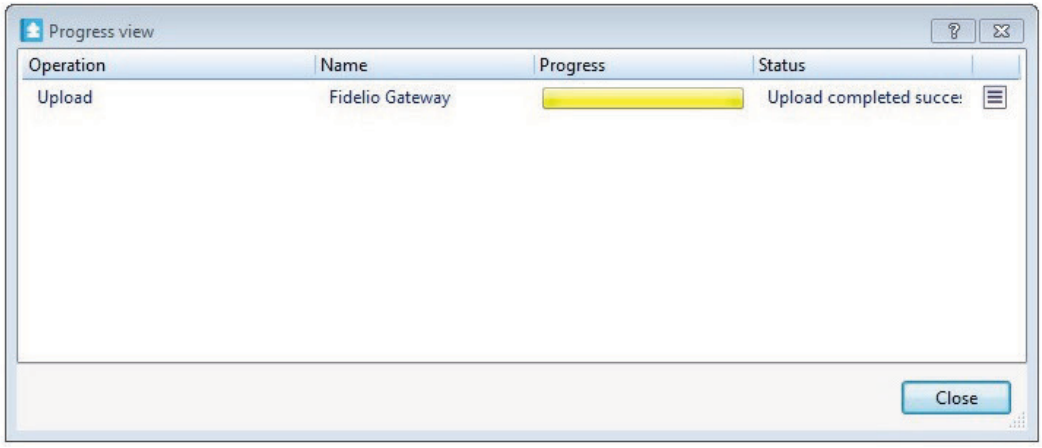
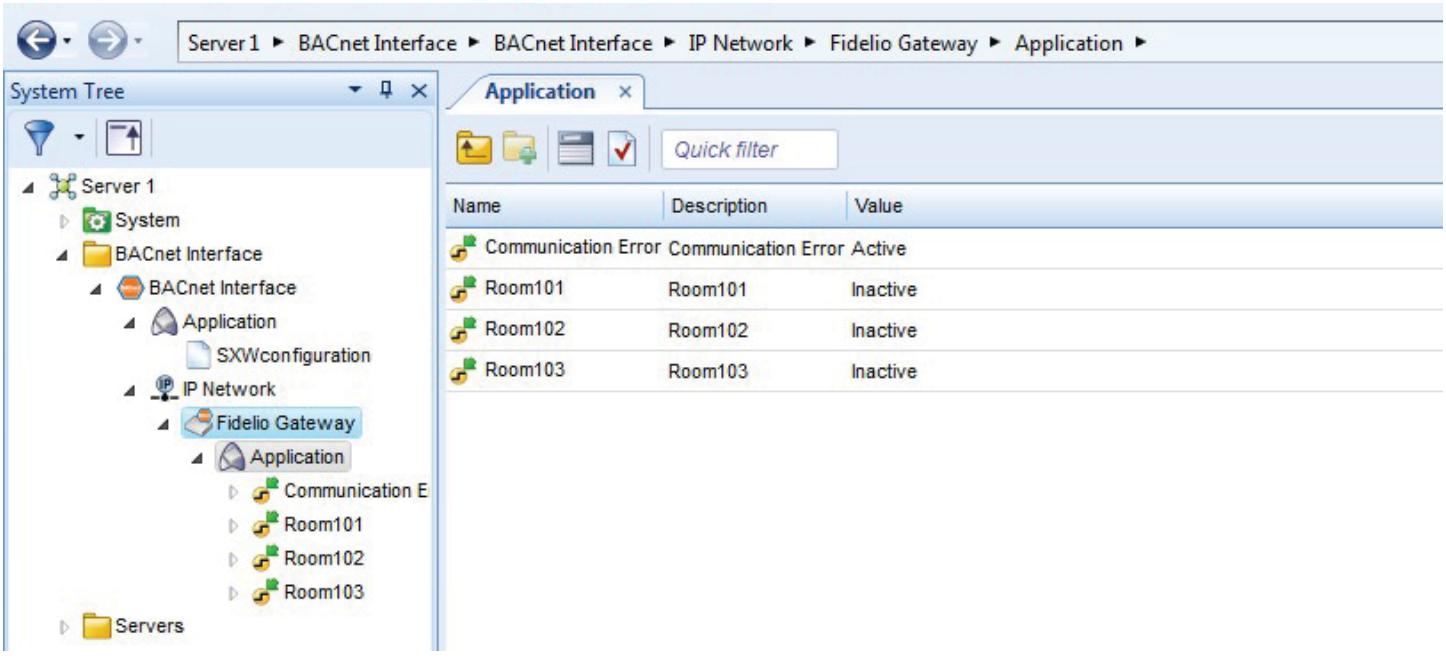


In the above dialogue window, it is possible to view the **Upload** progress. This operation will vary in time depending upon the size of the application



18. Once the objects have been uploaded, select the **Application** object, and in the **Application** window you will then be able to see the objects and add additional information about each object such as **Description**, **Value** and **BACnet name** as required.



In the above window you can see that extra information such as **Value** has been added to the view.

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SMARTSTRUXURE LITE AND SE ROOM CONTROLLERS

Creating a connection between the SSL MPM and SE Room Controllers and the SmartStruxure ES can be achieved in one of two ways.

The two types of connection are either BACnet/IP or EcoStruxure Web Service (EWS), these will provide access to the datapoints with the SSL MPM controller.

For more information, please refer to the following application documentation available on the Schneider-Electric Small Building Systems website:

Small Building Solution on Building Operation Workstation Integration

https://documentation.smartstruxurelite.com/display/DR/Small+Building+Solution+on+Building+Operation+Workstation+Integration

EWS Integration

https://documentation.smartstruxurelite.com/display/DR/EWS+Integration

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INTEGRATION EXAMPLE

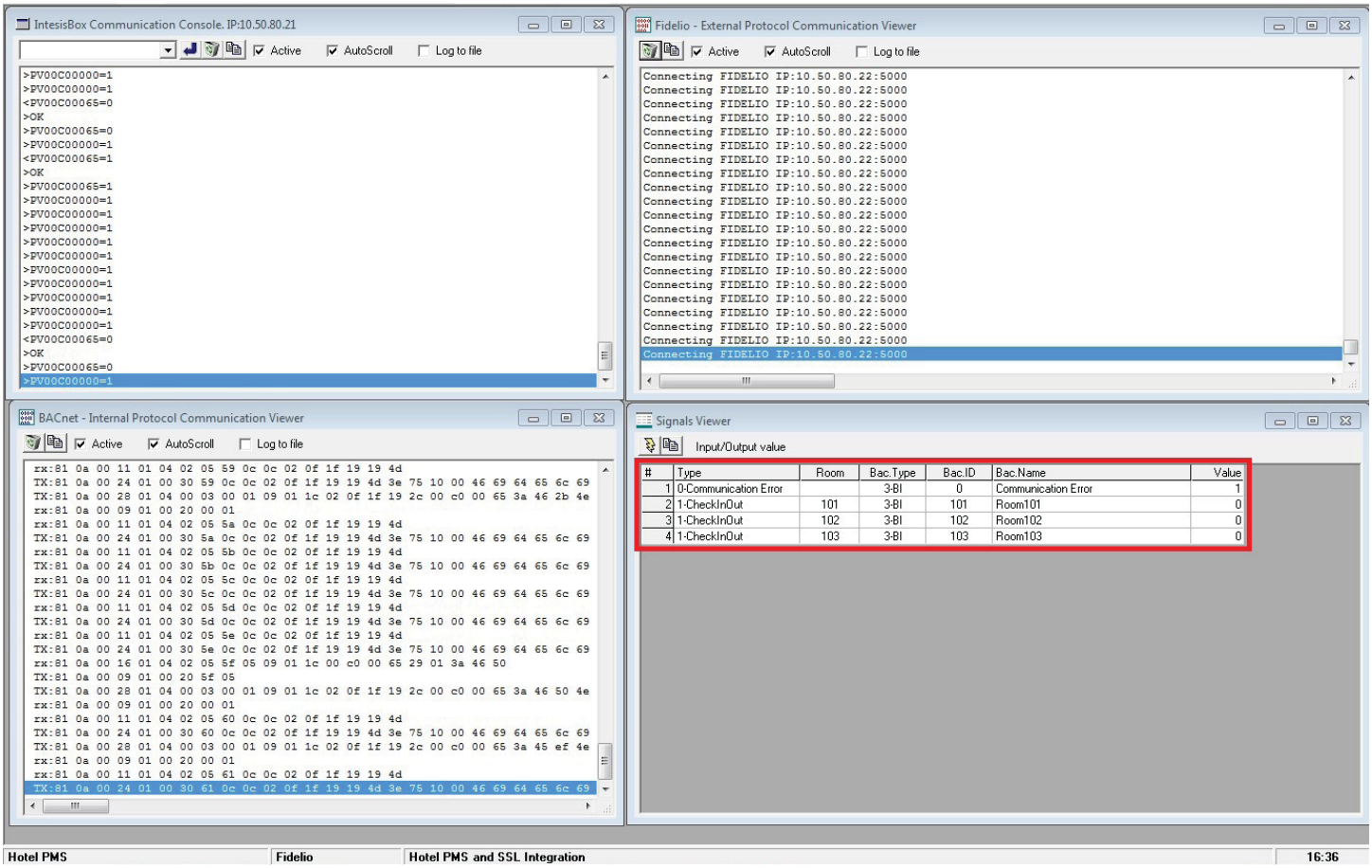
The following example presents the configuration of 3 rooms of a mock hotel. It shows the interaction between all the devices: Intesis Fidelio gateway, SmartStruxure Lite and SE8000 controllers and StruxureWare Building Operation Enterprise Server (SBO ES).

The general operation is as follows:

- Intesis/Fidelio gateway polls the Hotel PMS to monitor for changes in all room status.
- Intesis/Fidelio gateway presents the “Checked In” or “Checked Out” status as a binary value “True or False”, 1 or 0.
- SBO ES polls the room status values.
- SBO ES uses a Function Block Code to convert the “Checked In” and “Checked Out” values to match the integer values to be set on parameter “Occupancy Command” of the SE8000 controllers. A checked in room is in “Local Occupancy” with an “Occupancy Command” of 1, while a checked out room is “UnOccupied” with an “Occupancy Command” of 0.
- SE8000 Room Controller uses internal logic and interaction with peripheral devices to control room.

Room Status from Fidelio

The room status is managed from within Intesis/Fidelio BACnet server. For this example, it is being used in simulation mode to reproduce what would be the action of the Hotel PMS system.



- In the Intesis gateway it is possible to view the signals from the Hotel PMS system in the Signals Window
- Bac.Name represents the room and the associated SE Room Controller
- Value is relative to the “Room Booked” or “Room Not Booked” status, where 1 represents “Room Booked” and 0 represents “Room Not Booked”. In the above example as the value is 0 this indicates “Room Not Booked”, thereby changing the SE Room Controller from Local Occupancy to Unoccupied.

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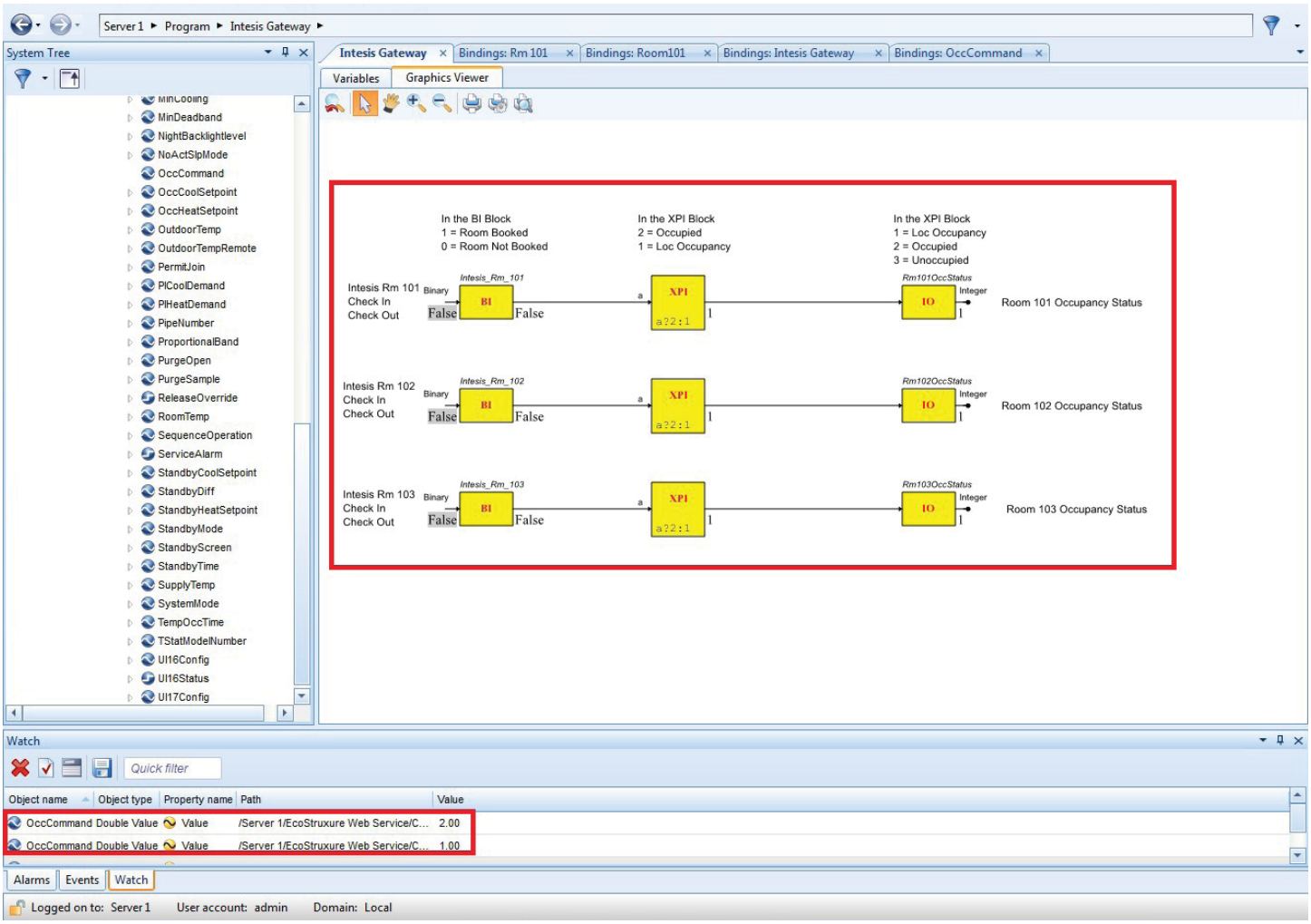
SmartStruxure Enterprise Server

Function Block Program

The **Function Block Program** as shown below is used to process the information from the Intesis/Fidelio BACnet server room **Checked In** or room **Checked Out** status, and then write the resulting value to the SE8000 Room Controller so as to change the **Occupancy Command** parameter from **Unoccupied** to **Local Occupancy** or vice versa.

Function Block Program Graphical View



- In the above it shows the Room "Function Block programme in the Graphics Viewer.
- It is also possible to view the value of the output to the SE Room Controllers.

In the **Function Block Graphics Viewer** you can see that the input from the Intesis/Fidelio BACnet server is **False** and the output to the SE Room Controller has a value of 3, thereby determining that the room is **Unoccupied**.

The output value can also be viewed in the **Watch** window and again can be seen to be 3.

The table below shows the results of the tests with the rooms not **Booked** and **Checked Out.**

Intesis Gateway	Room Booked Value	Room Status	SE Room Controller Integer Value	Room Occupancy Status	Result
Room 101	0	Checked Out	3	Unoccupied	Correct
Room 102	0	Checked Out	3	Unoccupied	Correct
Room 103	0	Checked Out	3	Unoccupied	Correct

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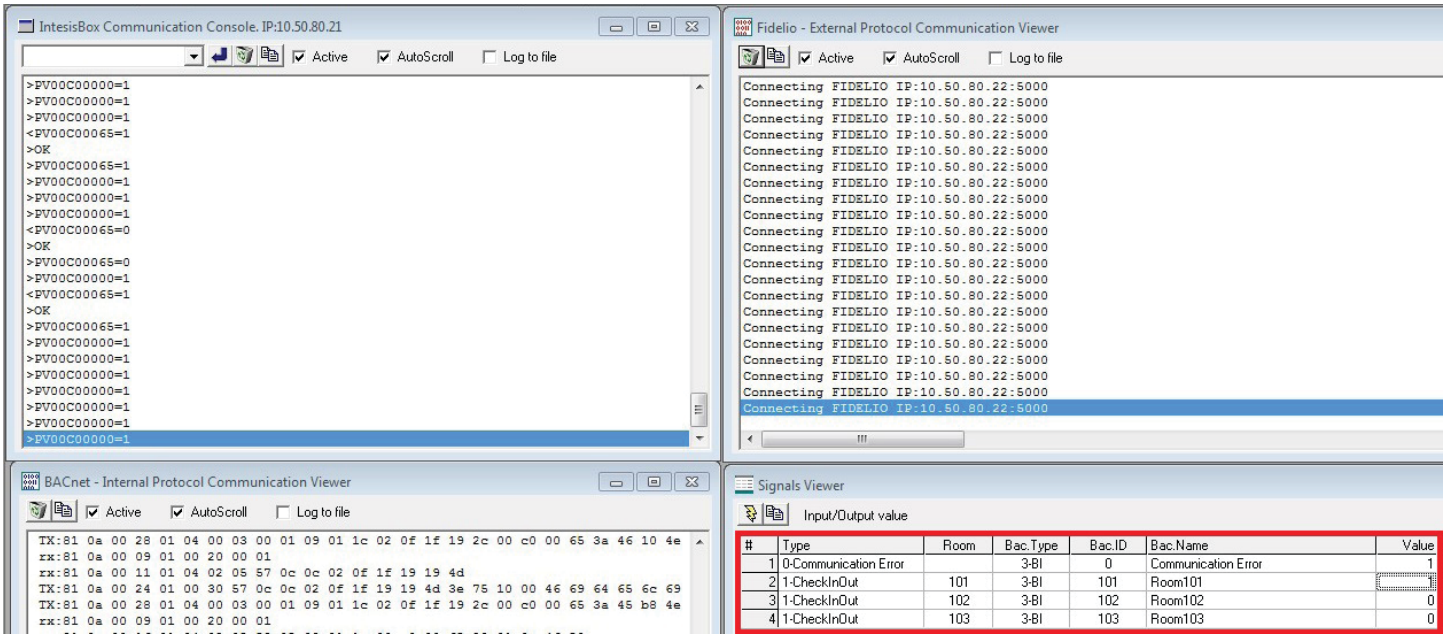
Room Booked Status

The following information was used when testing the **Room Booked** status correctly determines the SE Room Controller Local Occupancy and Unoccupied status

Intesis gateway


IntesisBox Communication Console. IP:10.50.80.21
Active
AutoScroll
Log to file
>PV00C00000=1
>PV00C00000=1
>PV00C00000=1
<PV00C00065=1
>OK
>PV00C00065=1
>PV00C00000=1
>PV00C00000=1
>PV00C00000=1
<PV00C00065=0
>OK
>PV00C00065=0
>PV00C00000=1
<PV00C00065=1
>OK
>PV00C00065=1
>PV00C00000=1
>PV00C00000=1
>PV00C00000=1
>PV00C00000=1
>PV00C00000=1
>PV00C00000=1
>PV00C00000=1
Fidelio - External Protocol Communication Viewer
Active
AutoScroll
Log to file
Connecting FIDELIO IP:10.50.80.22:5000
BACnet - Internal Protocol Communication Viewer
Active
AutoScroll
Log to file
TX:81 0a 00 28 01 04 00 03 00 01 09 01 1c 02 0f 1f 19 2c 00 c0 00 65 3a 46 10 4e
rx:81 0a 00 09 01 00 20 00 01
rx:81 0a 00 11 01 04 02 05 57 0c 0c 02 0f 1f 19 19 4d
TX:81 0a 00 24 01 00 30 57 0c 0c 02 0f 1f 19 19 4d 3e 75 10 00 46 69 64 65 6c 69
TX:81 0a 00 28 01 04 00 03 00 01 09 01 1c 02 0f 1f 19 2c 00 c0 00 65 3a 45 b8 4e
rx:81 0a 00 09 01 00 20 00 01
Signals Viewer
Input/Output value
Type Room Bac.Type Bac.ID Bac.Name Value
1 0-Communication Error 3-BI 0 Communication Error 1
2 1-CheckInOut 101 3-BI 101 Room101 1
3 1-CheckInOut 102 3-BI 102 Room102 0
4 1-CheckInOut 103 3-BI 103 Room103 0

- Room 101's status has been changed from 0 (**Checked Out**) to 1 (**Checked In**)
- Changing the value from 0 to 1 should thereby change the SE Room Controller from **Unoccupied** to **Local Occupancy**.

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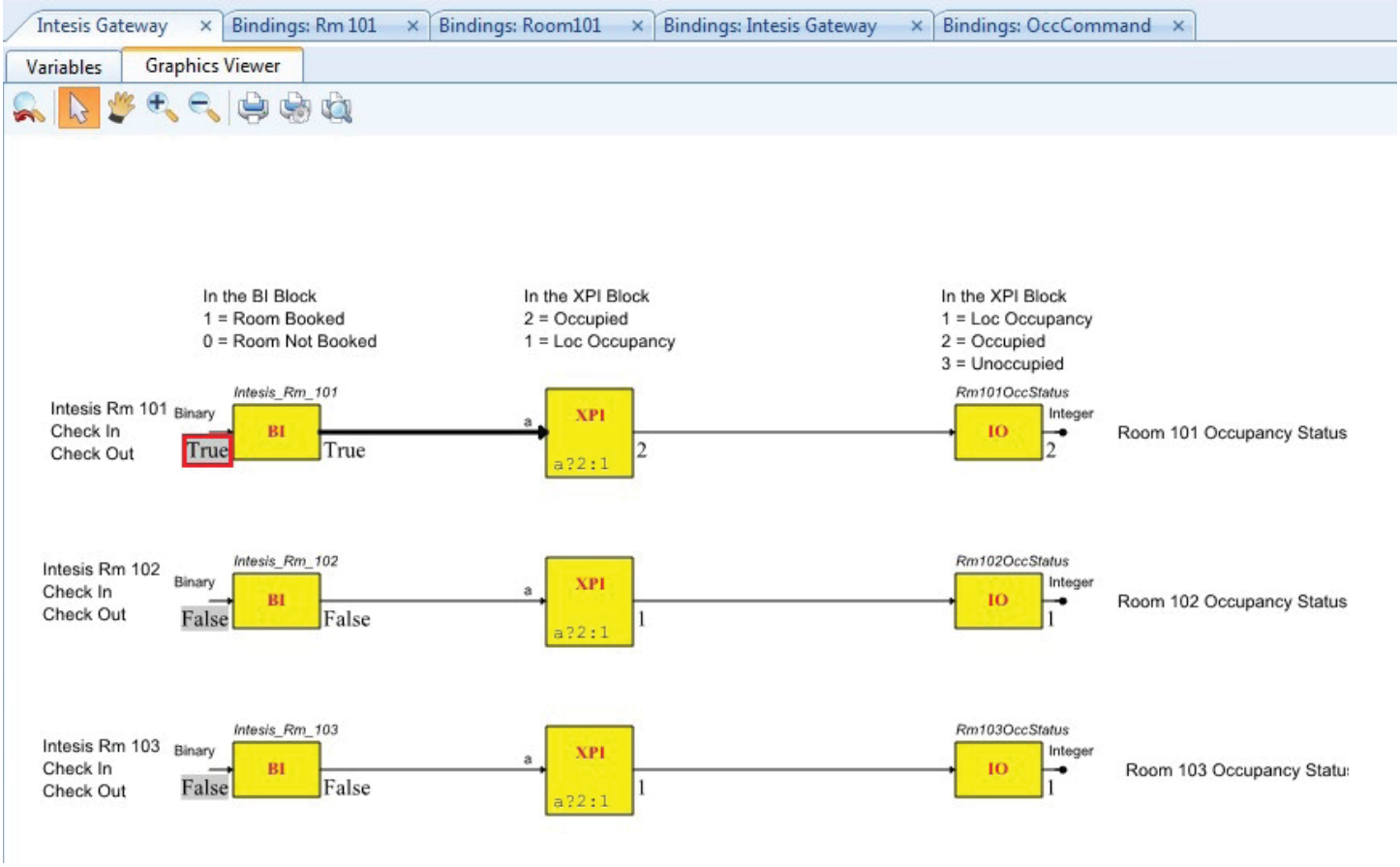

In the **Function Block Graphics Viewer** you can see that the input from the Intesis/Fidelio BACnet server for **Room 101** is **True** and the output to the SE Room Controller for **Room 101** has a value of 1, thereby determining that the room is occupied e.g. Local Occupancy mode.

Room 102 and **Room 103** still have **False** values as these have not been changed in the Intesis/Fidelio BACnet server and as such the output to the SE Room Controllers in **Room 102** and **Room 103** is **Unoccupied**.

The output value can also be viewed in the **Watch** window and again this value can be seen as a value of 1 and 3 respectively to the **Room 101**, **Room 102** and **Room 103**.

The table below shows the results of the tests with the rooms that are **Checked In** and **Checked Out**

Intesis Gateway	Room Booked Value	Room Status	SE Room Controller Integer Value	Room Occupancy Status	Result
Room 101	1	Checked In	1	Occupied = Local Occupancy mode	Correct
Room 102	0	Checked Out	3	Unoccupied	Correct
Room 103	0	Checked Out	3	Unoccupied	Correct

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